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Signed Andrew Gerrard

Dated 3 July 2003

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[redacted]2 E725876-1 002806
P01/7700 0.00-0213686.9

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet, from the Patent Office to help you fill in this form)

THE PATENT OFFICE
B
14 JUN 2002
NEWPORT

The Patent Office
Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference — JPP140

2. Patent application number *(The Patent Office will fill in this part)* — 0213686.9 — 14 JUN 2002

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

Altro Limited
Works Road
Letchworth
Hertfordshire
SG6 1NW

Patents ADP number *(if you know it)* 6139323001

If the applicant is a corporate body, give the country/state of its incorporation — England

4. Title of the invention — Improvements in or relating to Organic Material

5. Name of your agent *(if you have one)* — Barker Brettell

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

138 Hagley Road
Edgbaston
Birmingham
B16 9PW

Patents ADP number *(if you know it)* — 7442494002

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of Filing *(day/month/year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day/month/year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request *(Answer 'Yes' if:*
a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d)) — YES

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	
Description	7 + 7
Claim(s)	
Abstract	
Drawing(s)	2 + 2

10. If you are also filing any of the following, state how many against each item.

Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	
Request for preliminary examination *(Patents Form 9/77)*	
Request for substantive examination *(Patents Form 10/77)*	
Any other documents *(please specify)*	

11. I/We request the grant of a patent on the basis of this application.

Signature: Barker Brettell

Date: 13/06/02

12. Name and daytime telephone number of person to contact in the United Kingdom: **James P. Peel** **TEL: 0121-456 1364**

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Notes

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IMPROVEMENTS IN OR RELATING TO ORGANIC MATERIAL

The present invention provides a method for the ventilation of newly laid concrete floors and a ventilating floor covering.

Recently, there has been growing pressure in the construction industry for newly-built buildings to be ready for use in shorter periods of time. With new construction methods, it is now possible to construct a new building in a relatively short period of time compared to a few years ago. The time it takes for the concrete used in the construction of the building to cure has now been found to be a limiting factor. The problem is that if a building is furnished before the concrete is cured, the water vapour produced by the concrete in curing causes damp in the building, damaging the furnishings.

A way of ameliorating this problem has been sought.

According to the invention, there is provided a method of laying a floor covering to decorate and ventilate a concrete floor having an upper surface which method includes loose laying on the upper surface of the floor a floor covering having a decorative upper surface and a lower surface on which are formed a plurality of studs which provide an air gap between the lower surface of the floor covering and the upper surface of the floor sufficient to ventilate the floor.

One advantage of the method of the invention is that by not adhering the floor covering to a substantial portion of the floor and by providing studs on the lower surface of the floor covering, ventilation of the upper surface of the floor is possible such that water vapour produced by the concrete floor during its curing can escape. Thus, the method of the invention can be applied to concrete floors which have not completely

cured. As a result, there is less delay between the end of construction of a building and the fitting out of its interior for use by its occupants. The reduction of this delay results in considerable cost savings and increased convenience for both the constructor of the building and its future occupants alike.

According to the invention, there is also provided a ventilating decorative floor covering for loose laying on the upper surface of a floor which floor covering has a decorative upper surface and a lower surface on which are formed a plurality of studs which, in use, provide an air gap between the lower surface of the floor covering and the upper surface of the floor sufficient to ventilate the floor.

The studs formed on the lower surface of the floor covering may be of any dimension and density per unit area of the floor covering suitable to ventilate the floor to which the floor covering is to be applied. The floor covering is generally not adhered to the floor to which it is applied in order that the upper surface of the floor is not sealed. This allows water vapour to escape from the upper surface of the floor.

Preferably the floor covering is a plastics floor covering. Optionally the floor covering may be protected by a wear layer.

The lower surface of the floor covering is preferably roughened to ensure that there is better grip between the lower surface of the floor covering and the floor to which it is applied. One way in which this may be done is by including a blowing agent in the plastics material from which the lower surface of the floor covering is preferably formed. A suitable blowing agent for this purpose is a gas filled microsphere such as that marketed under the name Expancel by Akzo Nobel. The blowing agent is

preferably included in a sufficient amount to roughen the lower surface of the floor covering.

Optionally the wear layer further includes additives commonly used in the art such as a UV stabiliser, a biocide, and/or a flow aid such as fumed silica.

Preferably the floor covering has a first particulate material embedded in the upper surface which material is at least partially proud from the upper surface.

The floor covering is preferably a plastics flooring material. More preferably the floor covering includes PVC, a polyurethane, an epoxy resin, a plasticised acrylic, and/or a polyester. More preferably, the floor covering includes a plastics material such as a PVC plastisol or a plasticised acrylic material.

The floor covering preferably includes a second particulate material dispersed therein to further improve the non-slip properties of the flooring material or to enhance the wear resistance of the floor covering. The upper surface of the floor covering may optionally contain decorative elements such as a pigment and/or PVC chips. The floor covering preferably includes a reinforcing support; the support is preferably a glass fibre reinforced non-woven support.

The plastics material used to form the floor covering according to the invention preferably contains and/or is formed from a PVC powder (e.g. Pevikon P710, P820, EVC Evipol SC, Solvay Solvic 266) preferably in an amount of 100 parts, plasticiser (e.g. alkyl/aryl phosphate esters, an alkyl/aryl phthalate such as di-isodecyl phthalate, and/or di-isononyl phthalate) preferably in an amount of from 30 to 70 parts per hundred

parts of PVC powder (php), blowing agent (e.g. an azodicarbonamide or a gas filled microsphere such as that marketed under the name Expancel by Akzo Nobel) preferably in an amount from 0 to 2 php, filler (e.g. calcium carbonate, magnesium carbonate, talc etc) preferably in an amount of from 0 to 100 php, thermal stabiliser (e.g. an organometal soap stabiliser) preferably in an amount of from 1 to 3 php, pigment (e.g. titanium dioxide suspended in a compatible plasticiser from above) preferably in an amount of from 1 to 3 php. Other additives such as a rheology modifier, biocide, and/or a UV stabiliser may also be used.

The floor covering may be made up of one or more layers of plastics material; preferably up to three layers are envisaged.

The first and/or second particulate material is preferably a grit; more preferably it is one or more of a number of types of hard particles including silicon carbide, a silica (e.g. quartz, a coloured or natural sand or a flint), aluminium oxide and/or emery.

The floor covering may optionally further contain quartz chips or other decorative additives to add a decorative effect. Preferably the floor covering is embossed.

The invention is illustrated by a way of example with reference to the following drawings in which:-

Figure 1 shows a cross-sectional view of a floor covering according to the invention; and

Figure 2 shows a schematic view of a production line for use in the manufacture of a floor covering according to the invention.

The floor covering 1 shown in the figure has an upper layer 5 having a decorative surface 10, a scrim layer 25 and a lower layer 15 having a surface which is provided with studs 15. In use, the floor covering is placed on a floor such that the lower surface of the floor covering 1 engages an upper surface of the floor. The studs 15 allow the movement of air between the lower surface 10 of the floor covering and the upper surface of the floor. This allows ventilation of the floor which is important if the floor is of concrete which has not cured completely.

With reference to Figure 2, a production line indicated at 30 starts at the point indicated at 31 where a non-woven support is unwound onto an inert carrier belt. A base coat is applied at 32 which is then heated in oven 34. The surface of the base coat is melted by infra red heaters 36 before it is embossed at 38. The base coated support is then cooled and inverted such that its lower surface faces upwards at 40 before being subject to a top-coating process where a top coat is applied at 42 and aggregate material is scattered onto the top coat at 44. The top coat is then heated in oven 46. The surface of the top coat is melted by infra red heaters 48 before being embossed at 50. The product is then cooled, cut to length and then wound at 52.

The preparation of a plastics floor covering according to the invention is illustrated in the following example:

EXAMPLE 1

A plastisol having the formulation given in Table 1 was prepared as described below:

TABLE 1

Ingredients	Weight/kg
Solvic 266F	10 (100 parts)
Jayflex DIDP	5 (50 php)
Microdol H155	6.5 (65 php)
BZ505	0.2 (2 php)
Blue BLP pigment	0.2 (2 php)

Wherein Solvic 266SF is a PVC polymer manufactured by Solvay; Jayflex DIDP is a di-isodecyl phthalate plasticiser manufactured by Exxon; Microdol H155 is a calcium magnesium carbonate manufactured by Omya; BZ505 is a liquid barium zinc preparation containing organic barium compounds and phosphite manufactured by Witco; Blue BLP pigment is a phthalocyanine blue pigment manufactured by Ciba Pigments.

The ingredients were weighed in to a 50 litre steel vessel and mixed by a Zanelli MLV/50 mixer using a trifoil shaft at 100 rpm for 4 minutes and a dissolver shaft at 1800 rpm for 2 minutes. Aluminium oxide particles (from Washington Mills) size F40 (FEPA Standard 42-GB-1984 measurement) were weighed into each plastisol (10% w/w) and mixed.

The plastisol thus produced was used to make a floor covering according to the invention. It was spread coated at 1mm by knife over roller onto a non-woven support, and then fused at 185°C for 3 minutes and embossed with the stud pattern. The PVC sheet was then reversed and cooled, a second coating of the plastisol was then spread coated at 1mm onto the non-embossed surface. Particles of silicon carbide (F36 FEPA-Standard 42-GB-1984), coloured quartz (nominally 0.7-1.2mm) and plasticised pigmented PVC particles (nominally 2.5mm) were scattered onto the surface at an approximate rate of 100gm^{-2}, using standard equipment

known within the industry. The product was then fused at 175°C for 3 minutes and was embossed with a sufficient enough nip-gap (i.e. space between emboss rollers which determines the pressure applied) to apply the required surface finish, but without destroying the stud pattern on the reverse. This was achieved by the use of IR lamps to heat and soften the surface enough to allow a light pressure emboss to apply enough force to impress a pattern on the surface. The material was then cooled and wound onto a core.

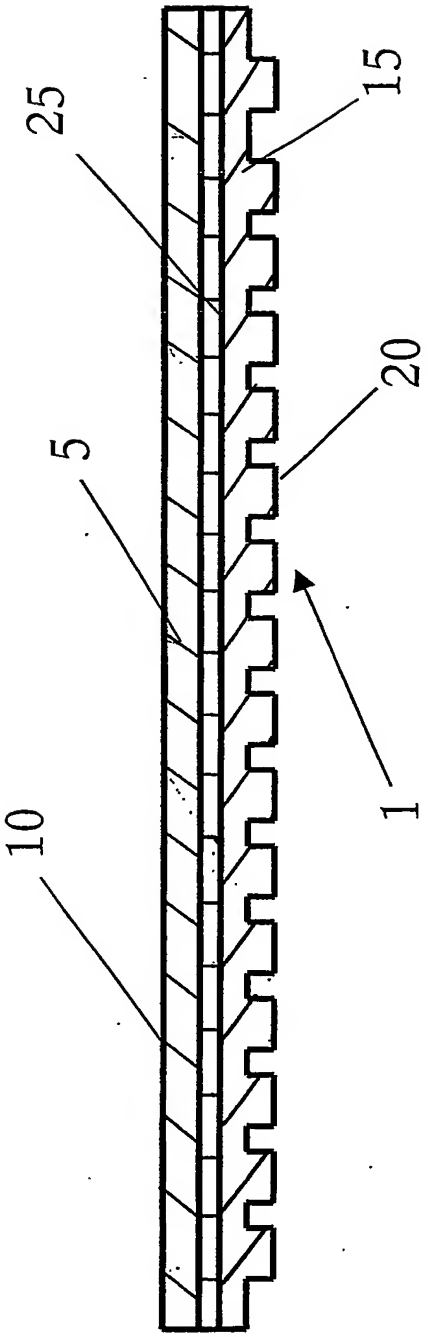

FIGURE 1

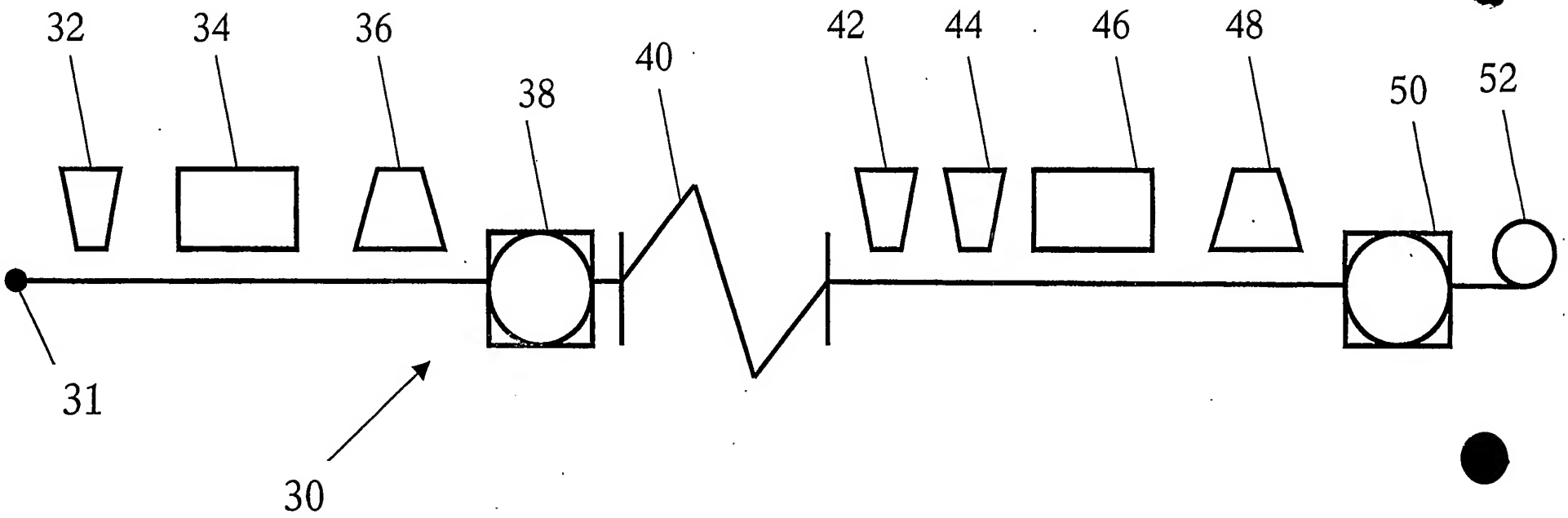

FIGURE 2